REMARKS

Preliminarily, Applicants respectfully request the Examiner to acknowledge the claim to domestic priority to provisional application No. 60/214,425 filed June 28, 2000.

Claim 11 directed to the non-elected invention has been canceled. Applicants reserve the right to file a divisional application directed to the canceled subject matter.

Review and reconsideration on the merits are requested.

Claims 1-10 and 12-14 were rejected under 35 U.S.C. § 112, second paragraph. The Examiner considered the language "thin" as used in claim 5 to be indefinite. Additionally, the Examiner considered the expression "carbon-made" as claimed in claim 1 to be unclear as to composition relative to the original language "made of carbon". Additionally, the pending claims were rejected under 35 U.S.C. § 112, first paragraph, as not finding written description support for the limitation "carbon-made" as claimed in claim 1.

In response, claim 1 has been amended to employ the original language "made of carbon". Also, claim 5 has been amended to delete the relative language "thin" to recite that graphite material is inserted between the end of the container and the guide electrode to prevent heat loss.

It is submitted that the claims as amended herein fully comply with 35 U.S.C. § 112, and withdrawal of the foregoing rejections is respectfully requested.

Claims 1, 9, 10, 12 and 13 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 6,375,918 to Ota et al. The grounds for rejection remain the same as set forth in the previous Office Action. Namely, the Examiner considered Ota et al as disclosing a furnace having a direct supply of the electricity within the scope of claim 1.

Applicants respectfully traverse for the following reasons.

The method of the present invention comprises filling a container made of carbon with carbon powder, and then passing electrical current through the container to thereby heat the powder contained in the container by means of ohmic-resistance heat generated from the container. In the Remarks portion of the Amendment filed August 26, 2002, Applicants contrasted the method of the present invention from Ota et al which discloses a conventional Acheson furnace where electric current is passed through packing coke such that containers containing the powder to be treated within the furnace are collectively heated. That is, in the present invention, electric current is passed through a container containing the powder to thereby generate electrical resistance heat, whereas in Ota et al, electric current is passed through the coke packing to thereby generate electrical resistance heat so as to indirectly heat powdered carbon within containers surrounded by the packing coke. In particular, the present invention solves the problems of the prior art in which a prolonged period of time is needed to carry out a heating and cooling cycle, and in which packing coke and handling thereof is unnecessary (page 4, lines 3-13 of the specification).

The details of the Acheson furnace are also discussed at col. 1, lines 32-46 of U.S. Patent 4,015,068 to Vohler (of record).

In both the Acheson furnace and in the method of the present invention, carbon powder placed in the container is heated via electric resistance heating. The difference is that in the invention electric current is passed through the container to directly heat the enclosed carbon powder, whereas in an Acheson furnace, heat generated by passing current through the packing

coke is transferred to the enclosed carbon powder via the container walls. This is because the graphite containers in the Acheson furnace do not conduct electricity or have a much higher resistance than the packing coke.

To more particularly point out this aspect of the invention, claim 1 has been amended to recite the step of passing electrical current through the container to thereby heat the carbon powder for graphitization by means of ohmic-resistant heat generated from the container. Support is found, for example, at page 11, lines 9-10 of the specification, namely, "electricity is supplied to the container at both ends". Thus, electric current necessarily passes through the container having both electrical resistance and electrical conductivity (page 10, line 23 - page 11, line 1), to thereby produce resistance heating. See also, for example, Example 1 at page 17, where electrodes were set on both ends of a crucible, and electricity was supplied to the crucible to heat the same to 3100°C (page 17, lines 15-20).

It is respectfully submitted that the amended claims are not anticipated by Ota et al, and withdrawal of the foregoing rejection under 35 U.S.C. § 102(e) is respectfully requested.

Claims 2-8 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ota et al taken with U.S. Patent 4,916,714 to Antoni et al and U.S. Patent 5,344,724 to Ozaki et al and U.S. Patent 4,015,068 to Vohler. The Examiner relied on the secondary references as teaching standard features of an Acheson furnace, including cell configuration and orientation, water cooling, use of a carbon filler and stacking.

Applicants respectfully traverse for the following reasons.

Antoni et al relates to graphitizing solid carbon electrodes by passing an electrical current through the electrodes. There is no carbon powder, no carbon powder is placed in a container and no electricity passed through a container containing carbon powder. As shown in Figs. 2A and 2B of Antoni et al, electricity is passed through rods CEG1 and CEG2 by applying electric power to electrodes 74A/74B and electrodes 75A/75B. That is, electricity is applied at electrodes 74A/74B, flows through the solid columns CEG1 and CEG2, passes through common heads 79A/79B as shown in Fig. 2B, passes through solid electrodes CEG1A and CEG2A, and is collected at opposite electrode 75A/75B. See the description at col. 5, lines 48-54. Additionally, contrary to the Examiner's understanding, there is no electrical connection to the tanks holding the solid carbon electrodes (col. 3, lines 22-26). Therefore, the discussion of the "metallic cage" of Antoni et al is irrelevant. In fact, these metallic steel cages are electrically insulated from one another (col. 3, lines 36-41). This is necessarily the case, because electric current is passed through the solid carbon rods.

Additionally, Fig. 7 of Antoni et al cited by the Examiner has nothing to do with the present invention. Fig. 7 concerns an electrical insulation system (col. 4, lines 37-58), and has nothing to do with plural compartments containing carbon powder or otherwise.

Therefore, Antoni et al has nothing in common with either Ota et al or the present invention.

Similar to Antoni et al, in Vohler electric current is passed through solid carbon electrode bodies to graphitize the same. There is no carbon powder or container enclosing carbon powder, or current passing through a container to thereby heat carbon powder via electrical resistance

heating. See, for example, col. 2, lines 29-33, where carbon bodies (i.e., the solid carbon columns to be graphitized) are clamped between electrodes and electric current is passed through the carbon bodies.

Ozaki et al concerns a technique for preparing a negative electrode by heat-treating carbonized particles through graphitization. In Ozaki et al, graphitization is conducted by treating in an Acheson furnace (col. 5, lines 37-44), the same type of furnace discussed in Ota et al (col. 1, lines 16-30), and Antoni et al (col. 1, lines 18-32 and in Vohler (col. 1, lines 32-46).

None of the secondary references teaches, suggests or otherwise discloses placing a carbon powder in a container made of carbon having electrical resistance and electrical conductivity, and passing electrical current through the container to thereby heat the carbon powder by ohmic-resistance heat generated from the container.

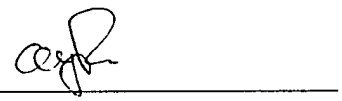
In view of the above, it is respectfully submitted that claims 2-8 and 14 are patentable over the cited references, and withdrawal of the foregoing rejections under 35 U.S.C. § 103(a) is respectfully submitted.

Withdrawal of all rejections and allowance of claims 1-10 and 12-14 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Abraham J. Rosner
Registration No. 33,276

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

Date: February 4, 2003

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claim 11 is canceled.

The claims are amended as follows:

1. (Twice Amended) A method for producing graphite carbon powder, comprising filling a [carbon-made] container made of carbon having electrical resistance and electrical conductivity with carbon powder which has been prepared from carbon material through crushing in advance, and [heating] passing electrical current through the container to thereby heat the carbon powder for graphitization by means of ohmic-resistance heat generated from the container [through a direct supply of electricity to the container].

5. (Twice Amended) A method for producing graphite carbon powder according to claim 4, wherein [thin] graphite material [which] is inserted between the end of the container and the guide electrode [prevents] to prevent heat loss at the end of the graphite container.